

Application No.: 10/728358

Docket No.: LP 4820 US NA

**REMARKS**

Applicant requests reconsideration of the application as amended. Claims 9 to 20 are pending. Claims 1 to 8 have been withdrawn following a restriction requirement. Claims 9, 17 and 19 have been amended to clarify that the hard yarn and elastomeric fiber are aligned and substantially parallel to one another without twisting, wrapping or core spinning. Support for the amendment is found in the specification in FIGs. 3A and 3B, and in paragraphs [00034], [00050] and [00051].

In the Final Office Action, claims 9-20 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over U.S. Patent No. 3,940,917 (Strachan) in view of U.S. Patent No. 5,896,634 (Brodowski); claims 9-10 and 12-20 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Strachan in view of Japanese Patent No. 4733754 (Nakatomi); claims 9-16 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Strachan in view of U.S. Patent No. 3,719,664 (Hayes); claims 13-20 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over over Strachan in view of Brodowski, as applied to claims 9-20, and further in view of U.S. Patent No. 3,867,242 (Miller); claims 13-20 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Strachan in view of Nakatomi, as applied to claims 9-20, and further in view of Miller; and claims 13-16 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Strachan in view of Hayes, as applied to claims 9-16, and further in view of Miller. Applicant respectfully traverses in view of the amendments to claims 9 and 19 and the following remarks.

In the various rejections for alleged obviousness, the primary reference cited by the Examiner is Strachan. Strachan discloses a composite yarn composed of un-crimped elastic yarn and at least five relatively inelastic continuous filaments entangled about the elastic yarn to provide protection and desirable textile properties.<sup>1</sup> In particular, Strachan discloses an "entangled yarn" in which hard fiber filaments 20 are shown entangled with other hard fiber filaments *about elastic yarn* 1, which in this case is a single yarn of coalesced spandex.<sup>2</sup>

<sup>1</sup> Strachan at ABSTRACT.

<sup>2</sup> Strachan at FIG. 3, column 4, lines 15-18.

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Applicant illustrated such a yarn in FIG. 1F in the description of the background art. Strachan fails to show a composite yarn in which the elastomeric fiber and the hard yarn are "aligned adjacent and substantially parallel" to one another "without twisting, wrapping or core spinning". The Examiner cites to Col. 6 of Strachan in which Strachan teaches against applying a size, except that a size may be used to aid in the entanglement of the yarn. However, Applicant's pending claims 9 and 19 expressly require a yarn in which the strands are aligned, and not entangled, and in which the size is used to adhere the aligned fibers. This is contrary to Strachan's teaching, in which size can optionally be applied to help entangle or twist the hard yarn fibers around the elastomeric fiber. In Strachan, if used, size helps to maintain separation of the strands, whereas in Applicant's invention, size helps to hold strands in alignment.

Applicant's claimed invention simplifies production of composite yarns. Applicant discovered that it is not necessary to spin, twist or wrap the hard yarn fibers around the elastomeric fiber if a size agent is applied to adhere the strands in parallel alignment. In the textile art, size is not generally applied to function as an adhesive to hold a composite yarn together. Thus, Applicant has taken a substance that is normally present in textiles and deployed it for an alternate purpose to produce a more efficient process for making a composite yarn – eliminating twisting or wrapping or entangling that was previously deemed necessary to combine an elastomeric fiber with a hard yarn. This invention is not rendered obvious simply because it was known to use size or sizing agents for other purposes. There is no motivation found in the art to create the composite yarn claimed herein. The Examiner selects portions of patent references that mention size without regard to the fact that (a) such references have not provided or suggested a composite yarn wherein the hard yarn and elastomeric fiber are aligned and substantially parallel, and (b) in some cases, such references expressly teach away from applying size to composite yarns.

Brodowski does not fill the gaps in the disclosure of Strachan. Brodowski discloses a *tangled* multifilament yarn, wherein at least the majority of the filaments are coated with a thin film "consisting mainly of hard wax" (emphasis added).<sup>3</sup> The wax is used to improve

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<sup>3</sup> Brodowski at ABSTRACT.

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weaveability of the tangled multifilament yarn. Brodowski's yarn contains no size or sizing agent. Brodowski expressly teaches away from incorporating any size or sizing agent whatsoever. At Col. 3, lines 45 to 49, Brodowski states: "The hard waxes employed according to the invention or mixtures with hard waxes certainly contain no sizing agent, whose disadvantages were already described at the beginning." The Examiner misreads Brodowski – in no instance does Brodowski combine wax with a sizing agent – Brodowski solely uses wax and Brodowski intends for the wax to remain in the fibers. In contrast, claims 9 and 19 require a size to be applied to the aligned elastomeric fiber and hard yarn, not a wax. Thus, neither Strachan nor Brodowski teach the composite yarn of claim 9, and claims 9 to 20 patentably distinguish over these references, whether taken alone or together.

Claims 9-10 and 12-20 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Strachan in view of Nakatomi. Applicant respectfully traverses the rejection.

As discussed above, Strachan does not disclose, suggest or make obvious the invention of claims 9-20. Nakatomi does not fill the gaps in the disclosure of Strachan. Nakatomi discloses a method for manufacturing a highly elastic fiber product by combining a specialty fiber strand wound with a continuous fiber strand.<sup>4</sup> Nakatomi shows in FIGs 1 -3, yarn structures in which the elastic fiber is "wrapped" or "wound" or jet covered with a continuous fiber strand. None of Nakatomi's yarn structures show an elastomeric yarn aligned and substantially parallel to a hard yarn without twisting, wrapping or core spinning. Nakatomi optionally applies a water-soluble size to the composite to help with weaving. It is only in the weaving operation that Nakatomi indicates that multiple composite fibers could be placed in parallel to one another. This is not in relation to forming the composite fibers – but only to the weaving operation using multiple composite fibers to form one woven textile. Thus, Strachan and Nakatomi, whether taken alone or in combination, do not disclose a composite yarn in which the hard yarn is aligned and substantially parallel to the elastomeric fiber without twisting wrapping or core spinning as is required in Claims 9 to 20.

Nor can the Examiner properly reconcile the contrary teachings of Strachan and

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Nakatomi. Strachan expressly teaches against applying a size or finish to the composite yarn if the size or finish would prevent the open entanglement sought by Strachan. Yet, Nakatomi optionally applies a size expressly to hold the wrapped fiber to the elastic fiber without regard to openness. These contrary teachings cannot be reconciled, and for this additional reason, Nakatomi is not properly combined with Strachan.

Claims 9-16 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Strachan in view of Hayes. Applicant respectfully traverses the rejection.

As discussed above, Strachan does not disclose, suggest or make obvious the invention of claims 9-20. Hayes discloses starch compositions that are especially useful in sizing hydrophobic yarns.<sup>5</sup> However, Hayes does not show a size applied to a composite yarn of elastomeric yarn and hard yarn that are aligned and substantially parallel without twisting, wrapping or core spinning. As stated above, Applicant found a way to combine an elastomeric yarn and a hard yarn and hold such together with size, to eliminate the need for wrapping, twisting or entangling the yarns. Neither Strachan nor Hayes show this advance. Thus, claims 9-20 are allowable.

Nor can the Examiner properly reconcile the contrary teachings of Strachan and Hayes. Strachan expressly teaches against applying a size or finish to the composite yarn if the size or finish would prevent the open entanglement sought by Strachan. Yet, Hayes applies a sizing agents to hydrophobic yarns without regard to openness. These contrary teachings cannot be reconciled, and for this additional reason, Hayes is not properly combined with Strachan.

Claims 13-20 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Strachan in view of Brodowski, as applied to claims 9-20, and further in view of Miller. Applicant respectfully traverses the rejection.

As discussed above, neither Strachan nor Brodowski disclose, suggest or make obvious the invention of claims 9-20. In an attempt to cure the deficiencies of Strachan and Brodowski,

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<sup>4</sup> Nakatomi at page 3, second paragraph.

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the Examiner proposes to combine Strachan and Brodowski with Miller. However, Miller does not fill the gaps. Miller discloses a fabric simulating woven fabric comprising conventional warp threads disposed in the longitudinal direction and a "filling" comprising monofilaments laid transversely over the warp threads.<sup>6</sup> Miller does not form a composite yarn. Miller does not weave a composite yarn in the weft or warp direction. In contrast to Miller, the composite yarn of the present invention *aligns* "at least one hard yarn" and "stretched strand" in an arrangement where the yarns are "adjacent and substantially parallel" to one another, as recited in claim 9. When Applicant's composite yarn is woven in either the weft or the warp, the hard yarn and the elastomeric fiber remain substantially aligned. Thus, claims 9 to 20 patentably distinguish over this purported combination of references.

Further, regarding claims 17-20, it is not predictable from Miller (i.e., an unexpected result) that the "strands of bare, essentially untwisted elastomeric fibers" remain "substantially parallel and adjacent to hard yarns," as recited in claims 17-20. Miller takes monofilaments and extrudes them over warp threads. Miller does not weave a composite yarn in either the warp or weft direction. Therefore, Miller does not overcome the deficiencies of Strachan and Brodowski.

Claims 13-20 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Strachan in view of Nakatomi, as applied to claims 9-20, and further in view of Miller. Applicant respectfully traverses the rejection.

As discussed above, Strachan and Nakatomi do not disclose, suggest or make obvious the invention of claims 9-20. In an attempt to cure the deficiencies of Strachan and Nakatomi, the Examiner attempts to combine Strachan and Nakatomi with Miller. However, Miller cannot overcome all the deficiencies of Strachan and Nakatomi for the same reasons discussed above with regard to the rejection based on Strachan with Brodowski and Miller.

Claims 13-16 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Strachan in view of Hayes, as applied to claims 9-16, and further in view of Miller. Applicant

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<sup>5</sup> Hayes at column 1, lines 5-10.

<sup>6</sup> Miller. at ABSTRACT.

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respectfully traverses the rejection.

As discussed above, Strachan and Hayes do not disclose, suggest or make obvious the invention of claims 9-16. In an attempt to cure the deficiencies of Strachan and Hayes, the Examiner attempts to combine Strachan and Hayes with Miller. However, Miller cannot overcome all the deficiencies of Strachan and Hayes as discussed below. Without wishing to be unduly repetitive, Miller does not show a composite yarn, nor does Miller show a woven fabric made by weaving with a composite yarn in either the warp or weft direction. Hence, where neither Strachan nor Hayes disclose a composite yarn with an elastomeric fiber aligned and substantially parallel with a hard yarn, Miller does not fill this gap.

### ***Conclusion***

In view of the above amendments and remarks, reconsideration and allowance of the pending claims are respectfully requested. Applicant believes that the present application is in condition for allowance, and an early indication of the same is respectfully requested.

If the Examiner has any questions or requires clarification, the Examiner is invited to contact the undersigned so that this Application may continue to be expeditiously advanced. In the event the Examiner believes an interview might serve to advance the prosecution of this application in any way, the undersigned is available at the telephone number noted below.

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No fee is believed due. The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 03-2775, under Order No. LP 4820 (10253-115).

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